



GERRY E. STUDDS  
**STELLWAGEN BANK**  
NATIONAL MARINE SANCTUARY

# **A Sanctuary Amidst Population and Development**

Ocean and Coastal Program Managers' Meeting 2006

**Craig MacDonald, PhD**

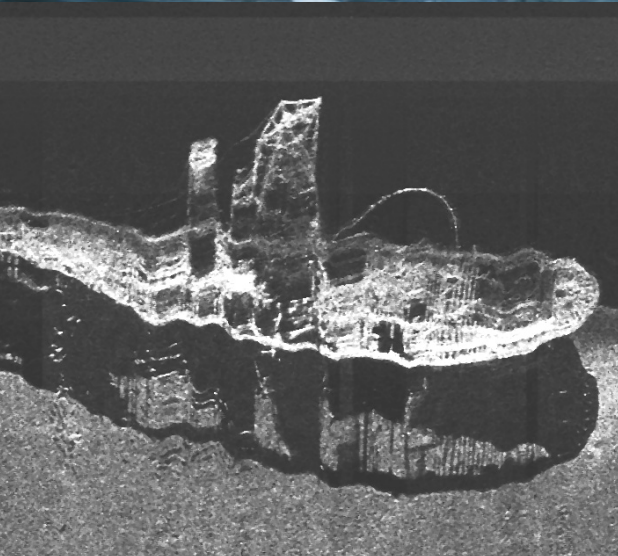
**Superintendent**

**Stellwagen Bank National Marine  
Sanctuary**



# MISSION

To conserve,  
protect and  
enhance the  
biodiversity,  
ecological integrity  
and cultural legacy  
of the  
Sanctuary while  
facilitating  
compatible use











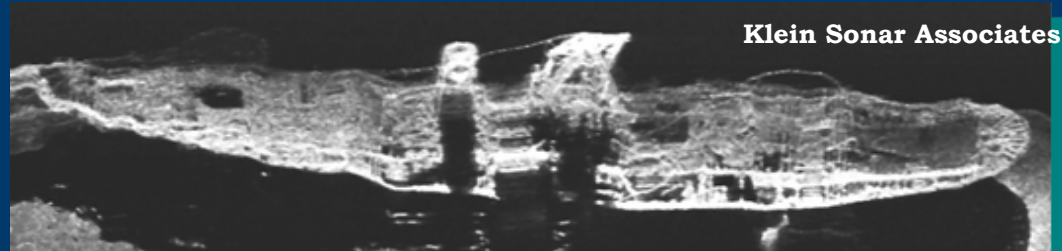
# Steamship *Portland*



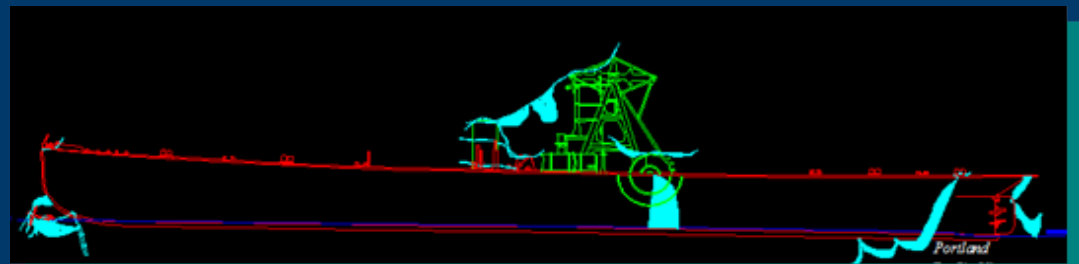
NURC-UConn



Maine Historical Society



Klein Sonar Associates



New England's Titanic - Listed on the National Register of Historic Places





## Major Uses Relating to the Sanctuary

### Within

- Mobile Fishing Gear
- Fixed Fishing Gear
- Commercial Whale Watching
- Ocean Transportation

### Adjacent

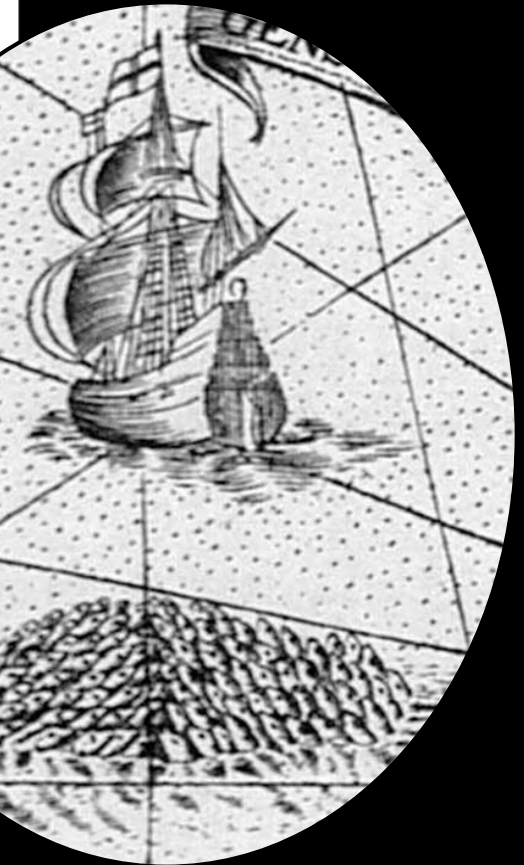
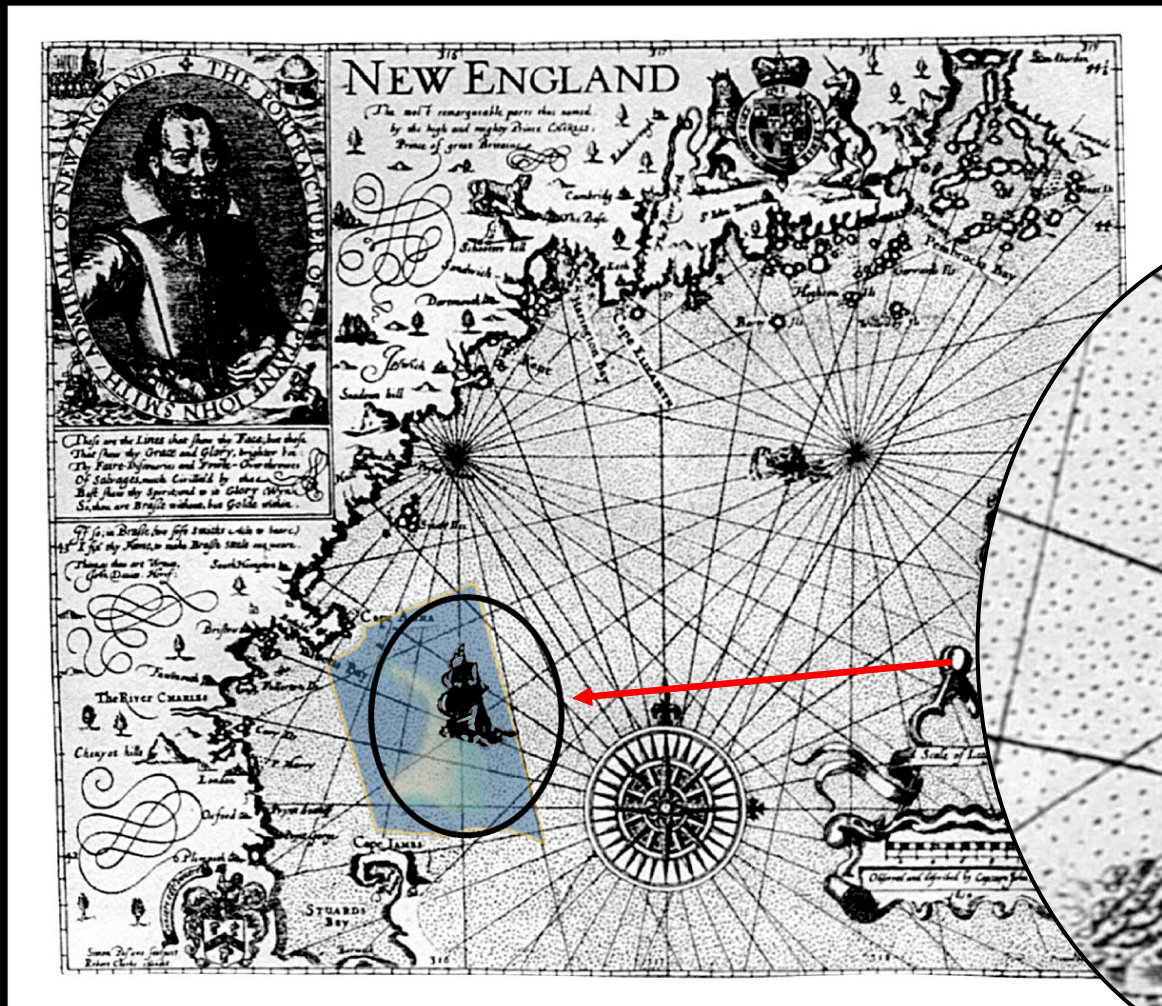
- MWRA Outfall
- Mass Bay Disposal Site
- Offshore Deepwater Ports (proposed)



# John Smith Mapped the First Fishing Ground in the

## Gulf of Maine

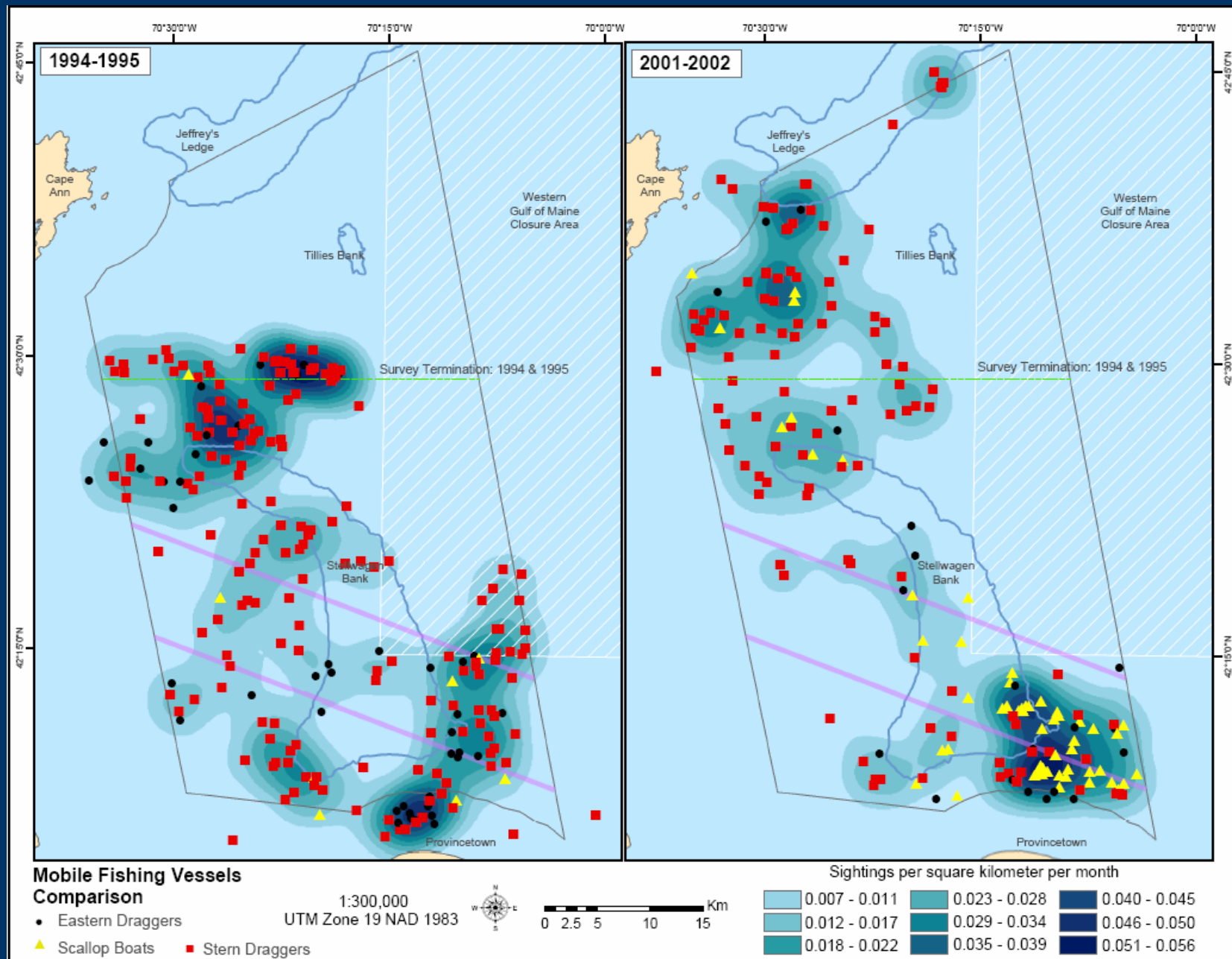
Embellishment,  
1635 edition



John Smith's *Map of New England*, 1616, with Stellwagen Bank and the National Marine Sanctuary superimposed.

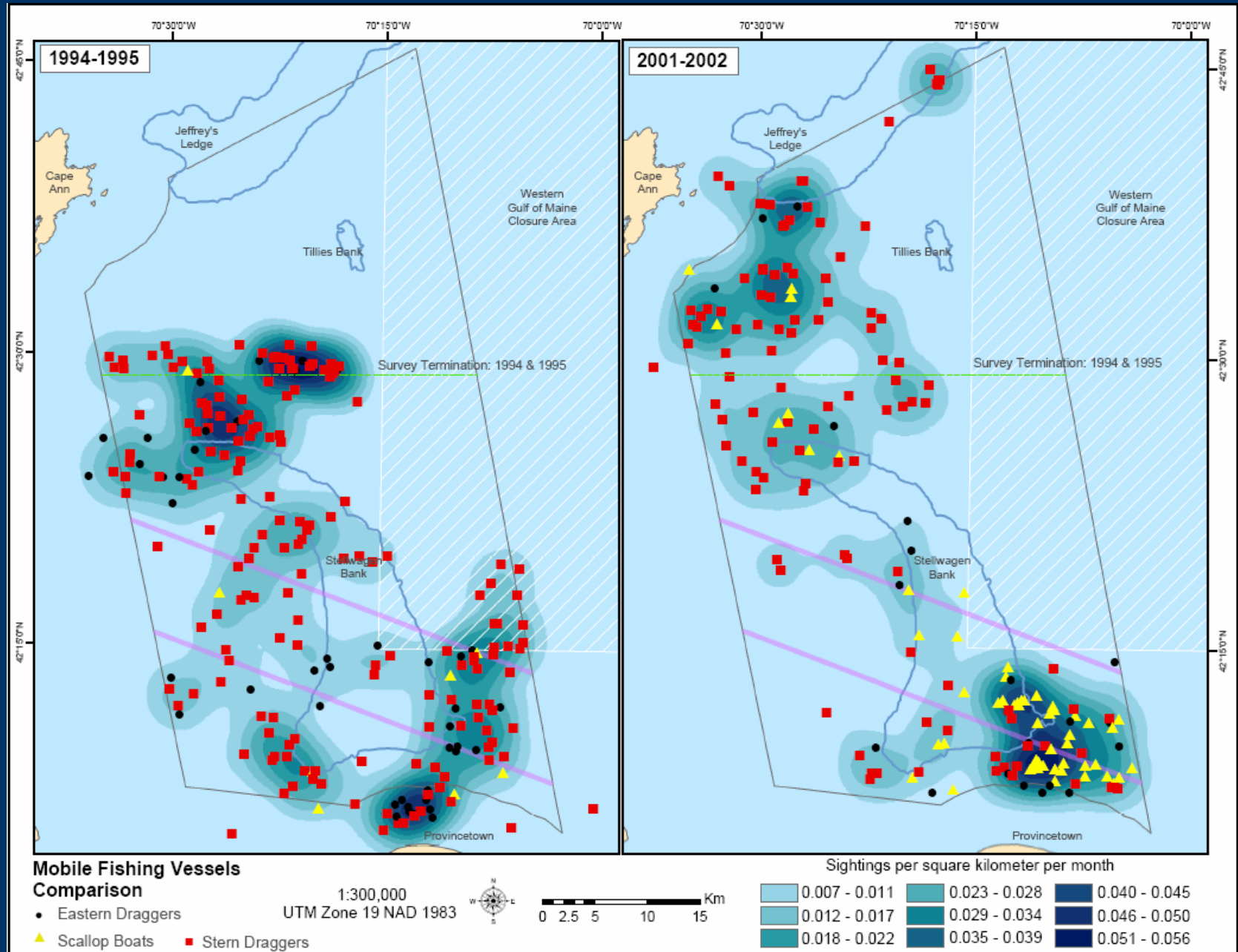


# Spatial-Temporal Distribution of Human Uses: Mobile Gear





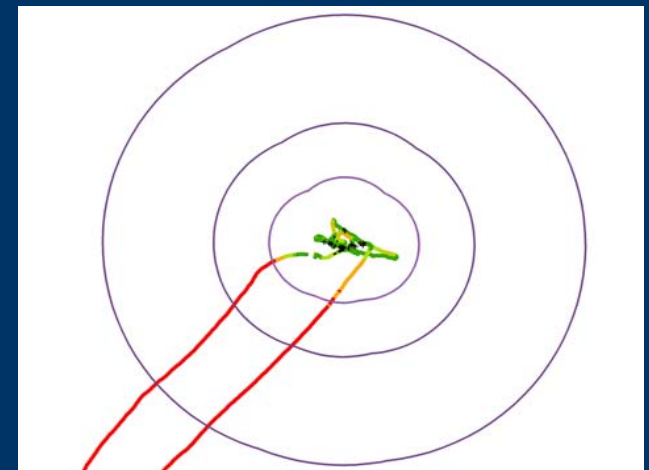
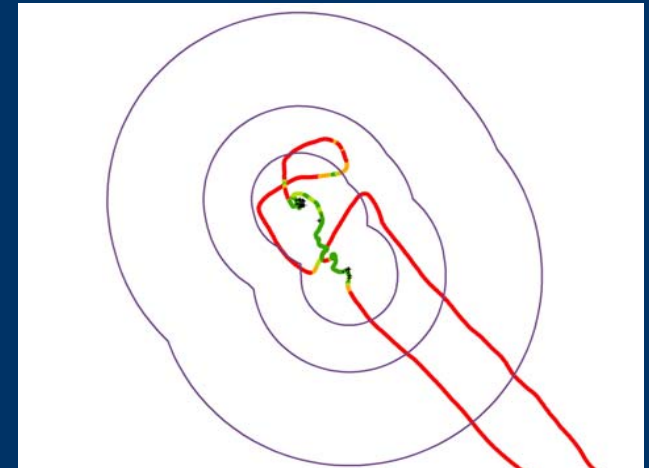
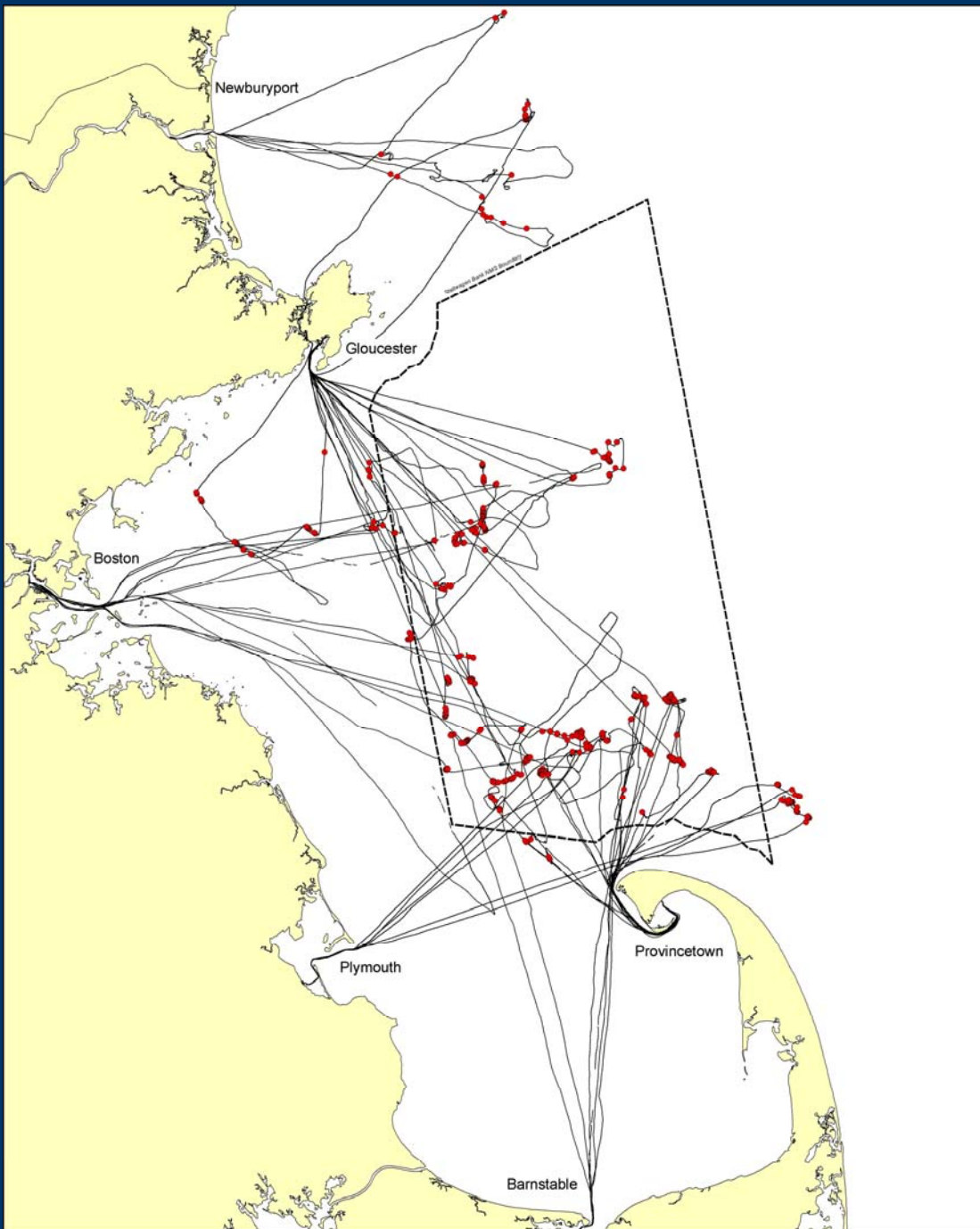
# Spatial-Temporal Distribution of Human Uses: Fixed Gear



# Trip Summary

- 35 trips; all principal ports and companies
- 650 range shots of whales

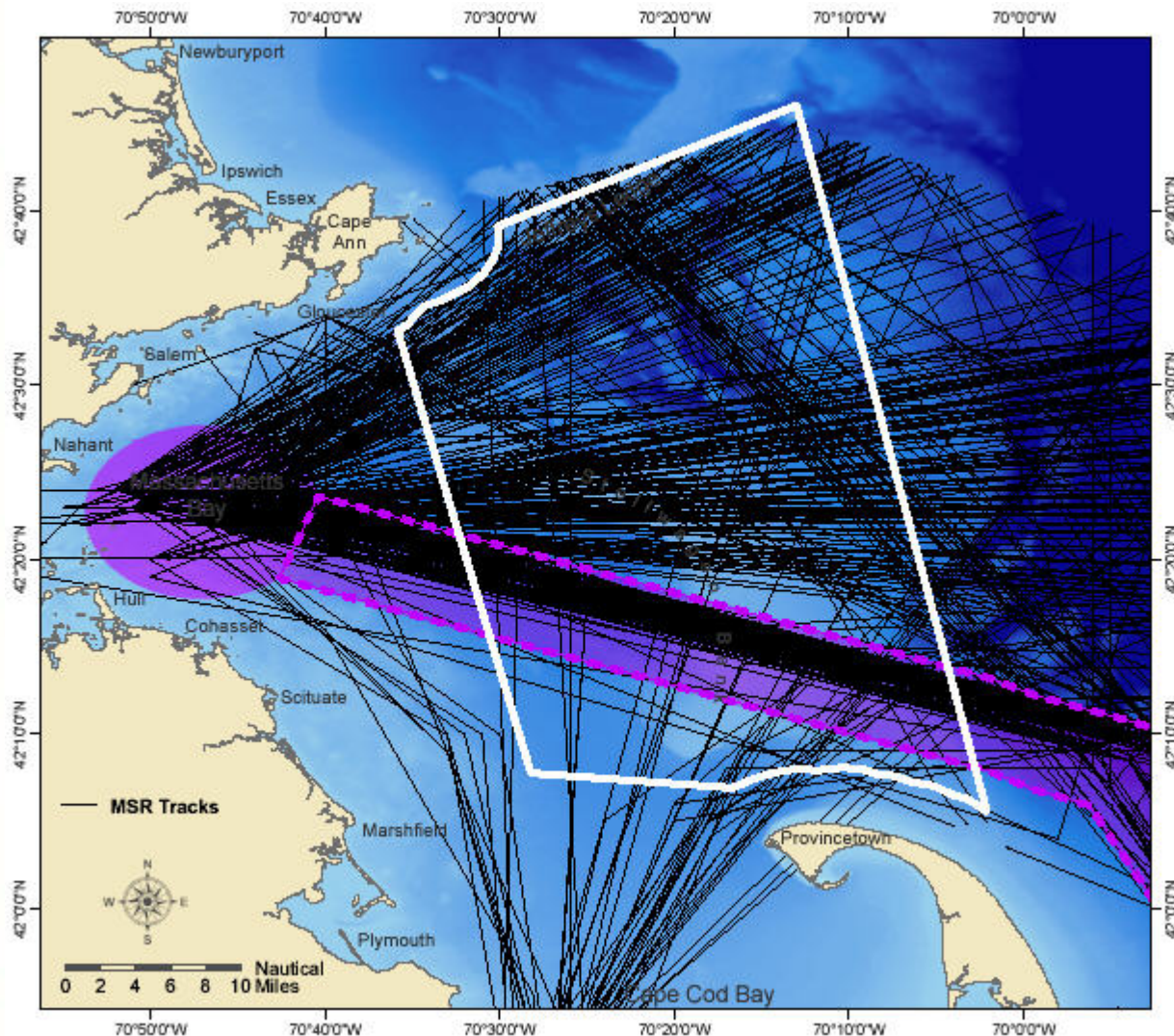
TOTAL	DUR_DHR	LENGTH_NM
MEAN	3.6	53.3
RANGE	2.1 - 5.1	20.1 - 82.7
SD	0.7	13.8







# GERRY E. STUDDS STELLWAGEN BANK NATIONAL MARINE SANCTUARY



## NMFS' Mandatory Ship Reporting Tracks 1999 - 2002

**Strikes occur where  
whales & vessels  
intersect**

### Growth surges at once-ailing port

Increases in shipping to Asia and Europe help produce 3d year of double-digit gains

By Robert Garlin  
GLOBE PHOTOS

Maritime cargo is moving through the Port of Boston at its fastest pace in years, driven by growing shipping services to Asia and Europe and bolstered by stronger domestic and international economies.

In the first half of this year, cargo volume was running 11 percent ahead of what it was in the first six months of 2004, marking the third consecutive year of double-digit growth, according to the Massachusetts Port Authority.

For this year, 91,000 standard containers (including empties) have been loaded and off-loaded at Conley Terminal in South Boston. That's a pace that would comfortably beat last year's 171,000, the highest annual volume in at least a decade.

Manport officials expect the port to keep growing. They recently launched a \$20 million expansion to increase Conley's capacity by half, and are considering other investments that would allow the port to handle bigger ships and more cargo faster.

With worldwide trade projected to double by 2020, Manport officials said that Boston is positioned to win a piece of this growth, particularly because of burgeoning East-West traffic through Cape Cod Bay.

"We are already talking to some of the assembly lines," said Brian Lerner, the port's director. "The port has given New England more efficient access to global markets, and we want to enhance that."

The second growth represents a turnaround for the port, which in the mid 1990s suffered from a lack of clearing in the face of falling cargo volumes. In the past decade, Manport has invested



Port of Boston's cargo volume rose 11 percent in the first half of 2005 vs. the same period last year, bolstered by stronger US and global economies.

#### International waters

The volume of cargo shipped through the Port of Boston has increased 38 percent since 1995, as traffic to Asia and Europe has surged.

#### CARGO MOVING THROUGH PORT OF BOSTON

in standard container units

Imports Exports



#### MARKET SHARE OF PORT OF BOSTON SHIPPING LINES

Line	Jan. 2005	Jan. 2004	Jan. 2003	Jan. 2002	Jan. 2001	Jan. 2000	Jan. 1999	Jan. 1998	Jan. 1997	Jan. 1996	Jan. 1995
CMA CGM	14.1%	13.1%	12.1%	11.1%	10.1%	9.1%	8.1%	7.1%	6.1%	5.1%	4.1%
Other	85.9%	86.9%	87.9%	88.9%	89.9%	90.9%	91.9%	92.9%	93.9%	94.9%	95.9%

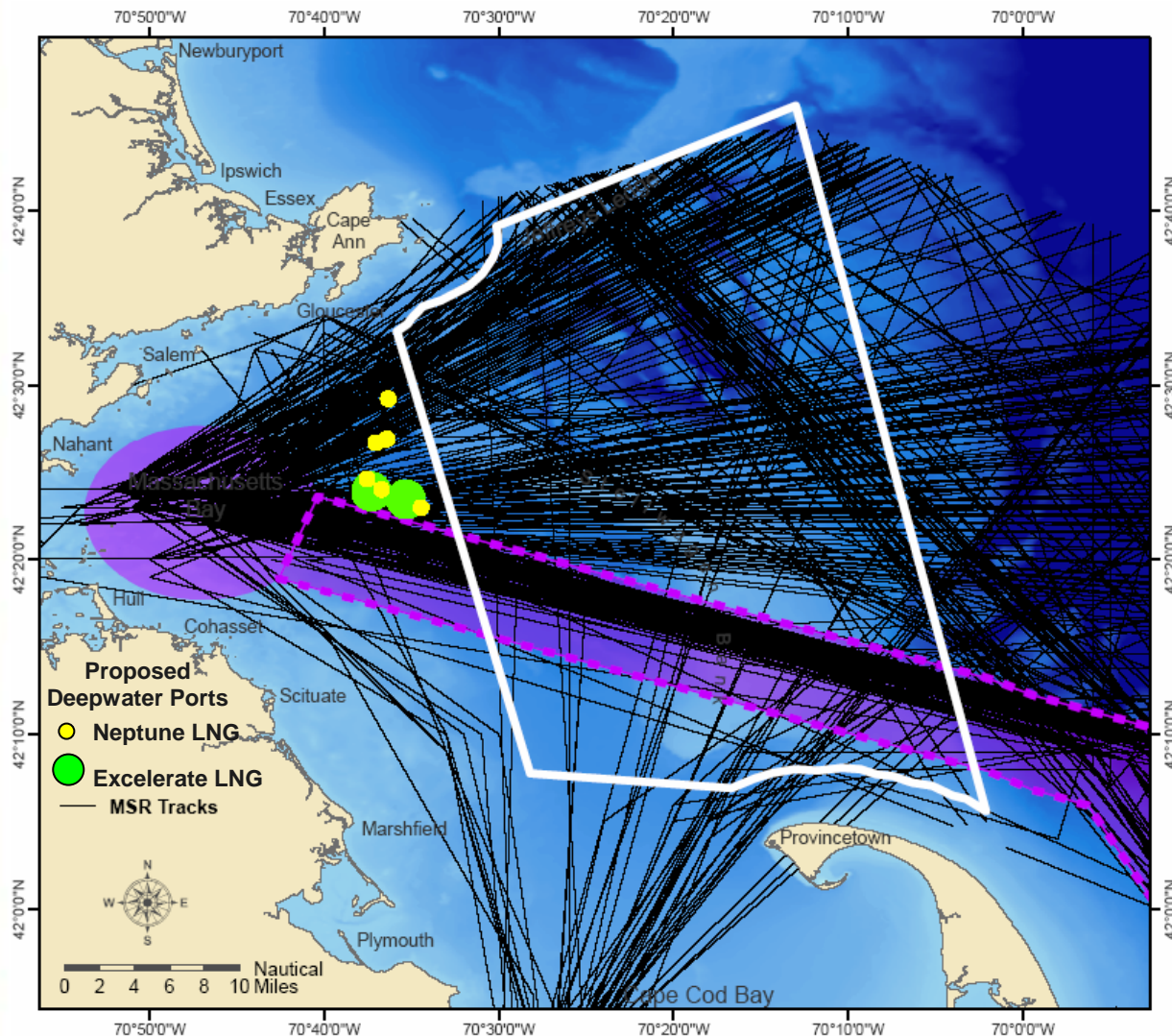
Source: Massachusetts Port Authority

Port of Boston, Page 4





# GERRY E. STUDDS STELLWAGEN BANK NATIONAL MARINE SANCTUARY



## NMFS' Mandatory Ship Reporting Tracks 1999 - 2002

**Strikes occur where  
whales & vessels  
intersect**

### Growth surges at once-ailing port

Increases in shipping  
to Asia and Europe  
help produce 3d year  
of double-digit gains

By Robert Garvin  
GLOBE PHOTOS

Maritime cargo is moving through the Port of Boston at its fastest pace in years, driven by growing shipping services to Asia and Europe and bolstered by stronger domestic and international economies.

In the first half of this year, cargo volume was running 11 percent ahead of what it was in the first six months of 2004, marking the third consecutive year of double-digit growth, according to the Massachusetts Port Authority.

For this year, 91,000 standard containers (including empties) have been loaded and off-loaded at Conley Terminal in South Boston. That's a pace that would comfortably beat last year's 175,000, the highest annual volume in at least a decade.

Manport officials expect the port to keep growing. They recently launched a \$20 million expansion to increase Conley's capacity by half, and are considering other investments that would allow the port to handle bigger ships and more cargo faster.

With worldwide trade projected to double by 2020, Manport officials said that Boston is positioned to win a piece of this growth, particularly because of burgeoning East-West trade through Cape Cod Bay.

"We are already talking to some of the assembly lines," said Brian Lenoir, the port's director. "The port has given New England more efficient access to global markets, and we want to enhance that."

The second growth represents a turnaround for the port, which in the mid 1990s suffered from the brack of closing in the face of falling cargo volumes. In the past decade, Manport has turned



#### International waters

The volume of cargo shipped through the Port of Boston has increased 38 percent since 1995, as traffic to Asia and Europe has surged.

#### CARGO MOVING THROUGH PORT OF BOSTON

In standard container units

In Imports

In Exports

In Total

In 1995

In 2005

In 2006

In 2007

In 2008

In 2009

In 2010

In 2011

In 2012

In 2013

In 2014

In 2015

In 2016

In 2017

In 2018

In 2019

In 2020

In 2021

In 2022

In 2023

In 2024

In 2025

In 2026

In 2027

In 2028

In 2029

In 2030

In 2031

In 2032

In 2033

In 2034

In 2035

In 2036

In 2037

In 2038

In 2039

In 2040

In 2041

In 2042

In 2043

In 2044

In 2045

In 2046

In 2047

In 2048

In 2049

In 2050

In 2051

In 2052

In 2053

In 2054

In 2055

In 2056

In 2057

In 2058

In 2059

In 2060

In 2061

In 2062

In 2063

In 2064

In 2065

In 2066

In 2067

In 2068

In 2069

In 2070

In 2071

In 2072

In 2073

In 2074

In 2075

In 2076

In 2077

In 2078

In 2079

In 2080

In 2081

In 2082

In 2083

In 2084

In 2085

In 2086

In 2087

In 2088

In 2089

In 2090

In 2091

In 2092

In 2093

In 2094

In 2095

In 2096

In 2097

In 2098

In 2099

In 2100

In 2101

In 2102

In 2103

In 2104

In 2105

In 2106

In 2107

In 2108

In 2109

In 2110

In 2111

In 2112

In 2113

In 2114

In 2115

In 2116

In 2117

In 2118

In 2119

In 2120

In 2121

In 2122

In 2123

In 2124

In 2125

In 2126

In 2127

In 2128

In 2129

In 2130

In 2131

In 2132

In 2133

In 2134

In 2135

In 2136

In 2137

In 2138

In 2139

In 2140

In 2141

In 2142

In 2143

In 2144

In 2145

In 2146

In 2147

In 2148

In 2149

In 2150

In 2151

In 2152

In 2153

In 2154

In 2155

In 2156

In 2157

In 2158

In 2159

In 2160

In 2161

In 2162

In 2163

In 2164

In 2165

In 2166

In 2167

In 2168

In 2169

In 2170

In 2171

In 2172

In 2173

In 2174

In 2175

In 2176

In 2177

In 2178

In 2179

In 2180

In 2181

In 2182

In 2183

In 2184

In 2185

In 2186

In 2187

In 2188

In 2189

In 2190

In 2191

In 2192

In 2193

In 2194

In 2195

In 2196

In 2197

In 2198

In 2199

In 2200

In 2201

In 2202

In 2203

In 2204

In 2205

In 2206

In 2207

In 2208

In 2209

In 2210

In 2211

In 2212

In 2213

In 2214

In 2215

In 2216

In 2217

In 2218

In 2219

In 2220

In 2221

In 2222

In 2223

In 2224

In 2225

In 2226

In 2227

In 2228

In 2229

In 2230

In 2231

In 2232

In 2233

In 2234

In 2235

In 2236

In 2237

In 2238

In 2239

In 2240

In 2241

In 2242

In 2243

In 2244

In 2245

In 2246

In 2247

In 2248

In 2249

In 2250

In 2251

In 2252

In 2253

In 2254

In 2255

In 2256

In 2257

In 2258

In 2259

In 2260

In 2261

In 2262

In 2263

In 2264

In 2265

In 2266

In 2267

In 2268

In 2269

In 2270





## Some Collateral Impacts of Deepwater Ports Regarding the Sanctuary

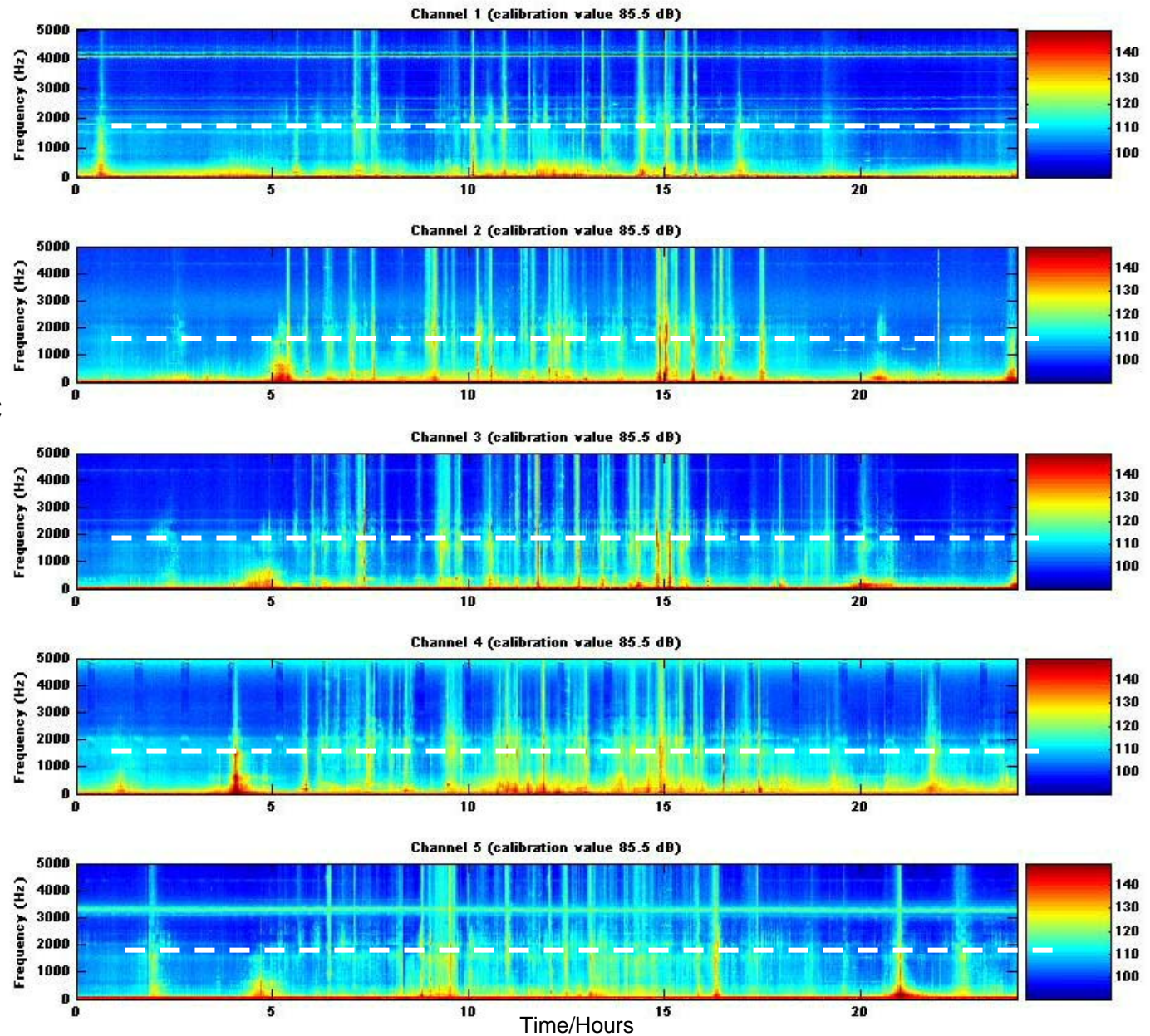
### Displacement of Activities into the Sanctuary

- Commercial Fishing
- Whale Watching

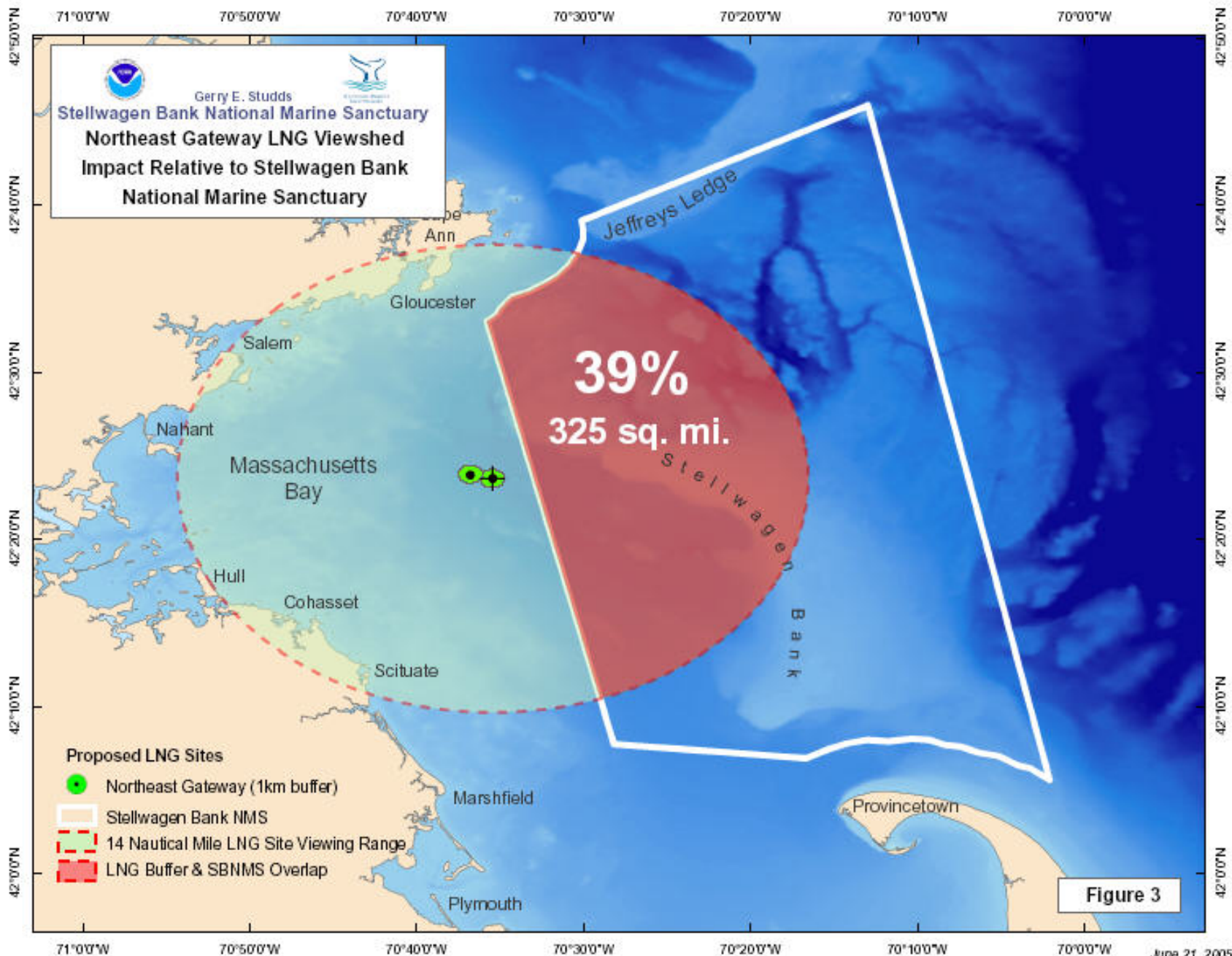
### Environmental Concerns

- Noise
- Aesthetics

24 Hour  
Spectrogram of  
sound within a  
portion of the  
SBNMS resulting  
from 2004 pilot  
study. Note chronic  
loud sound in the  
<1000 Hz  
bandwidth used by  
baleen whales









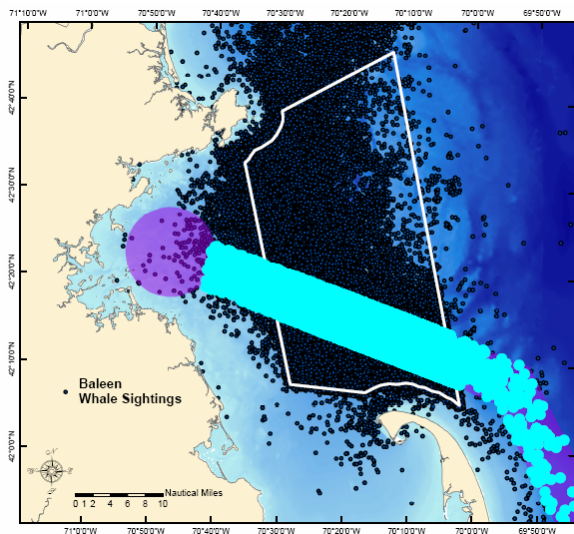
## A Successful Mitigation

Realizing Dramatic Conservation Benefit to  
Endangered Large Whale Species by Moving  
and Narrowing the Boston Shipping Lanes

- Accommodation of LNG Deepwater Ports



# GOAL: Spatially Separate Whales and Vessels

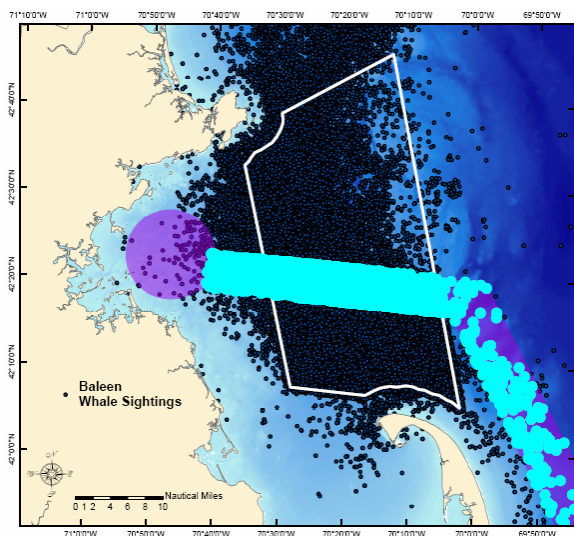


## Existing TSS

Humpback	41,742
Right	402
Fin	9,365
Minke	10,233

Total =

**61,742**



## Proposed TSS

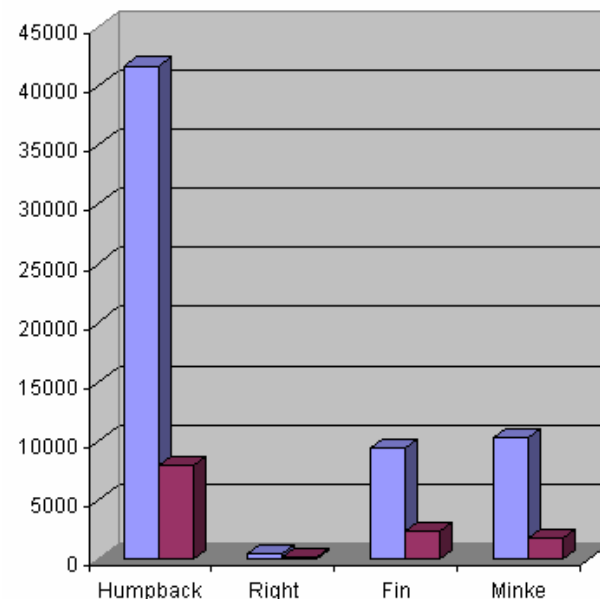
Humpback	7,864
Right	71
Fin	2,286
Minke	1,701

Total =

**11,922**

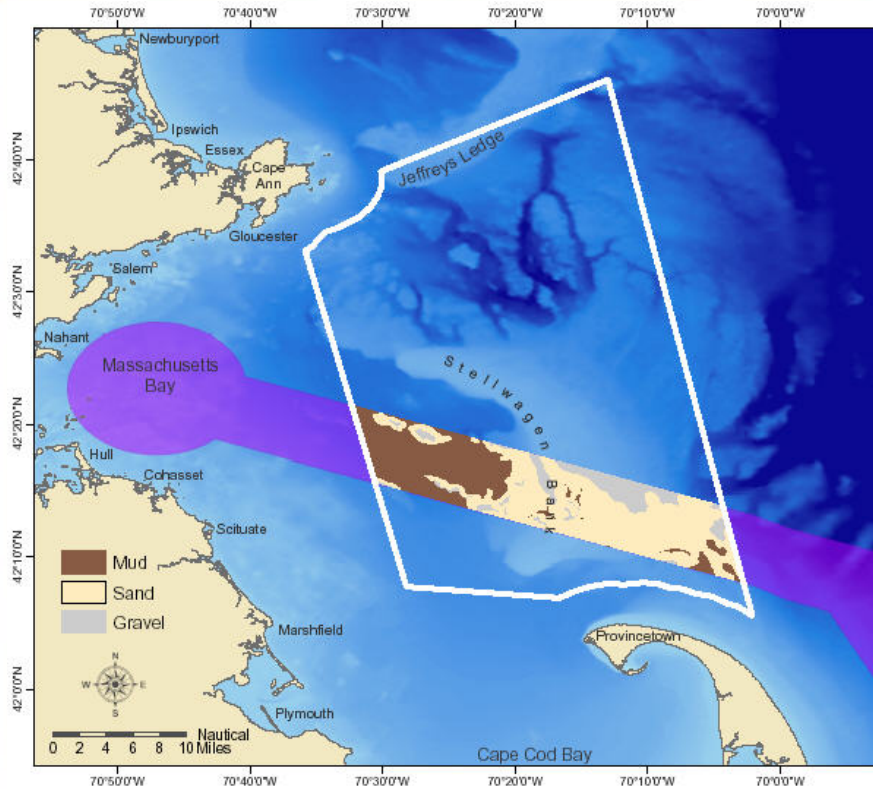
**(81% reduction in risk)**

## Baleen Whales: Whale Watch Database 1979 - 2004








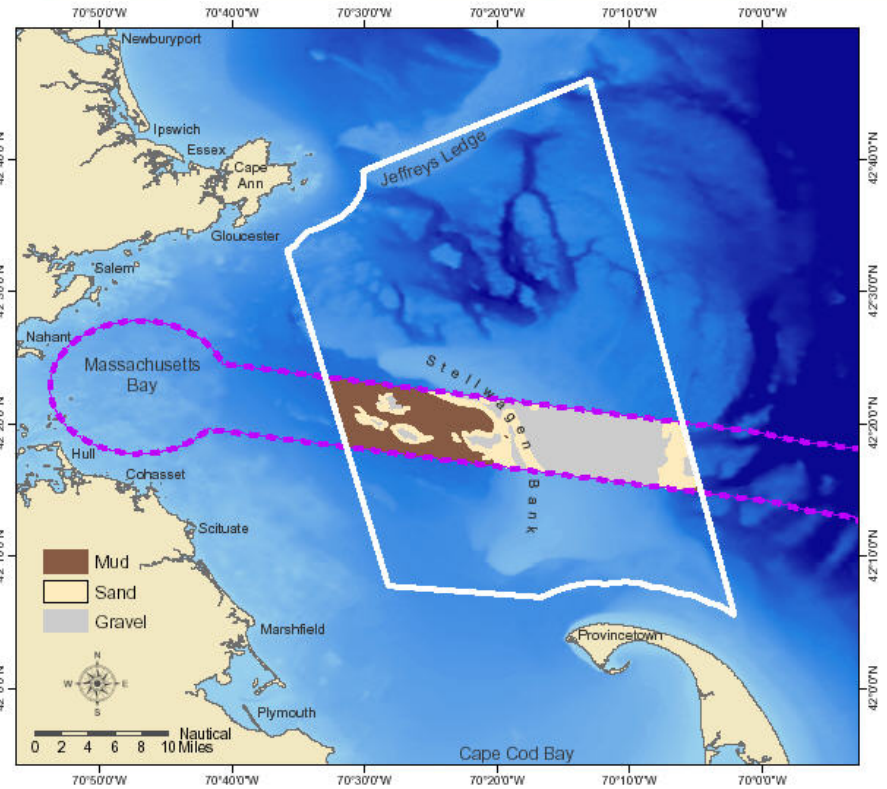
# GERRY E. STUDDS STELLWAGEN BANK NATIONAL MARINE SANCTUARY






## Existing TSS

36%  Mud  
● 48%  Sand  
16%  Gravel

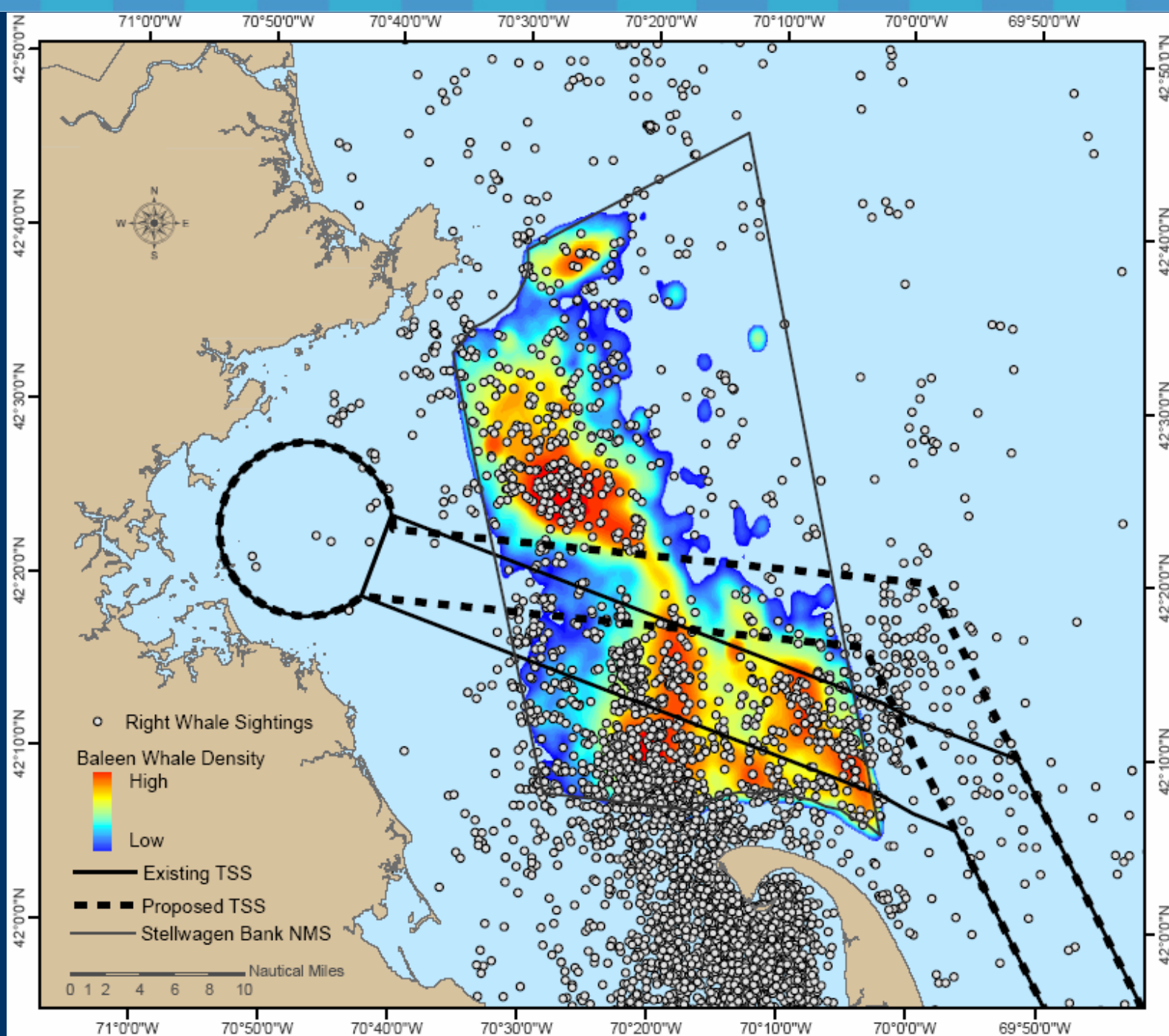
## Sediment Classification

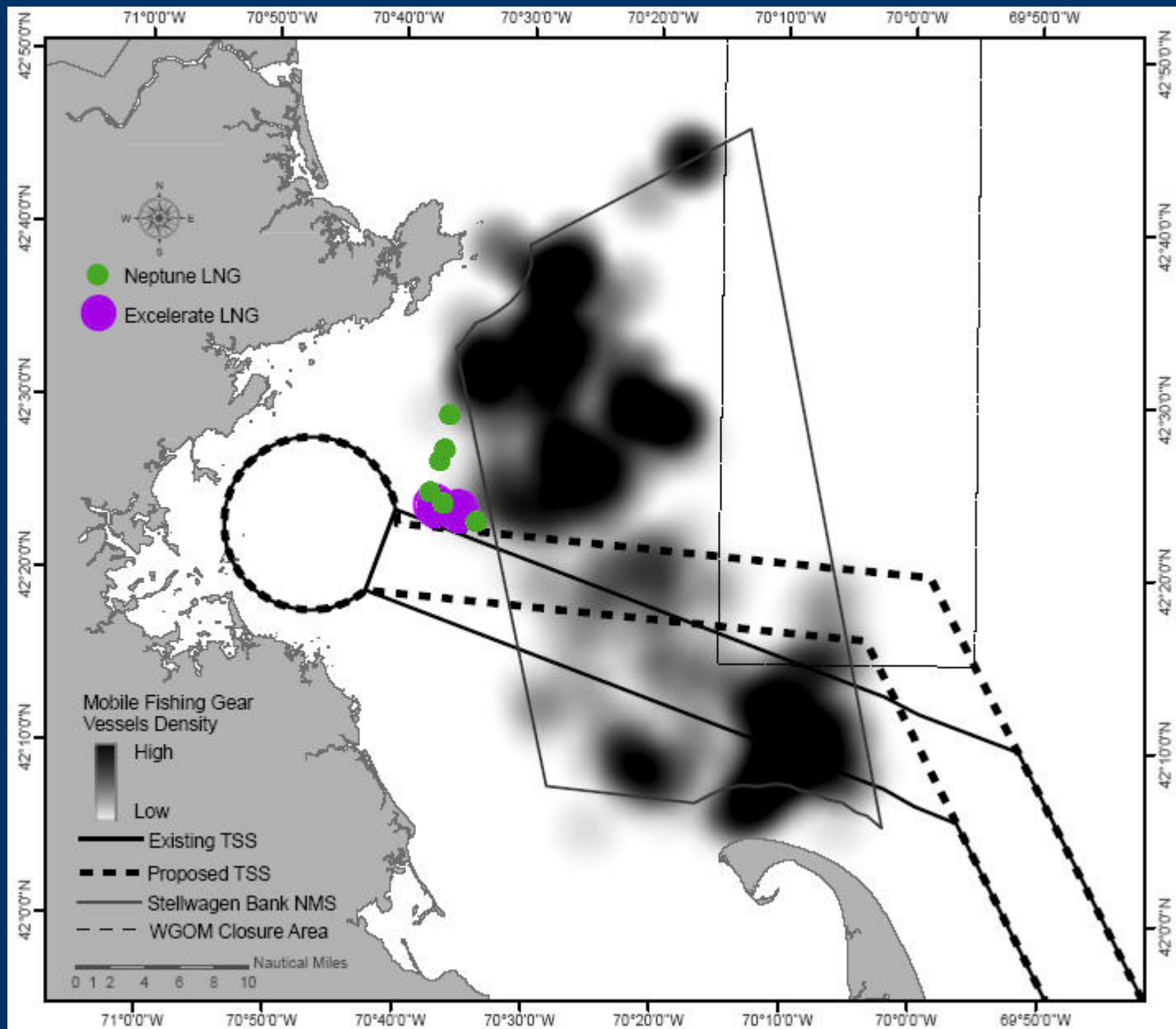


## Proposed TSS

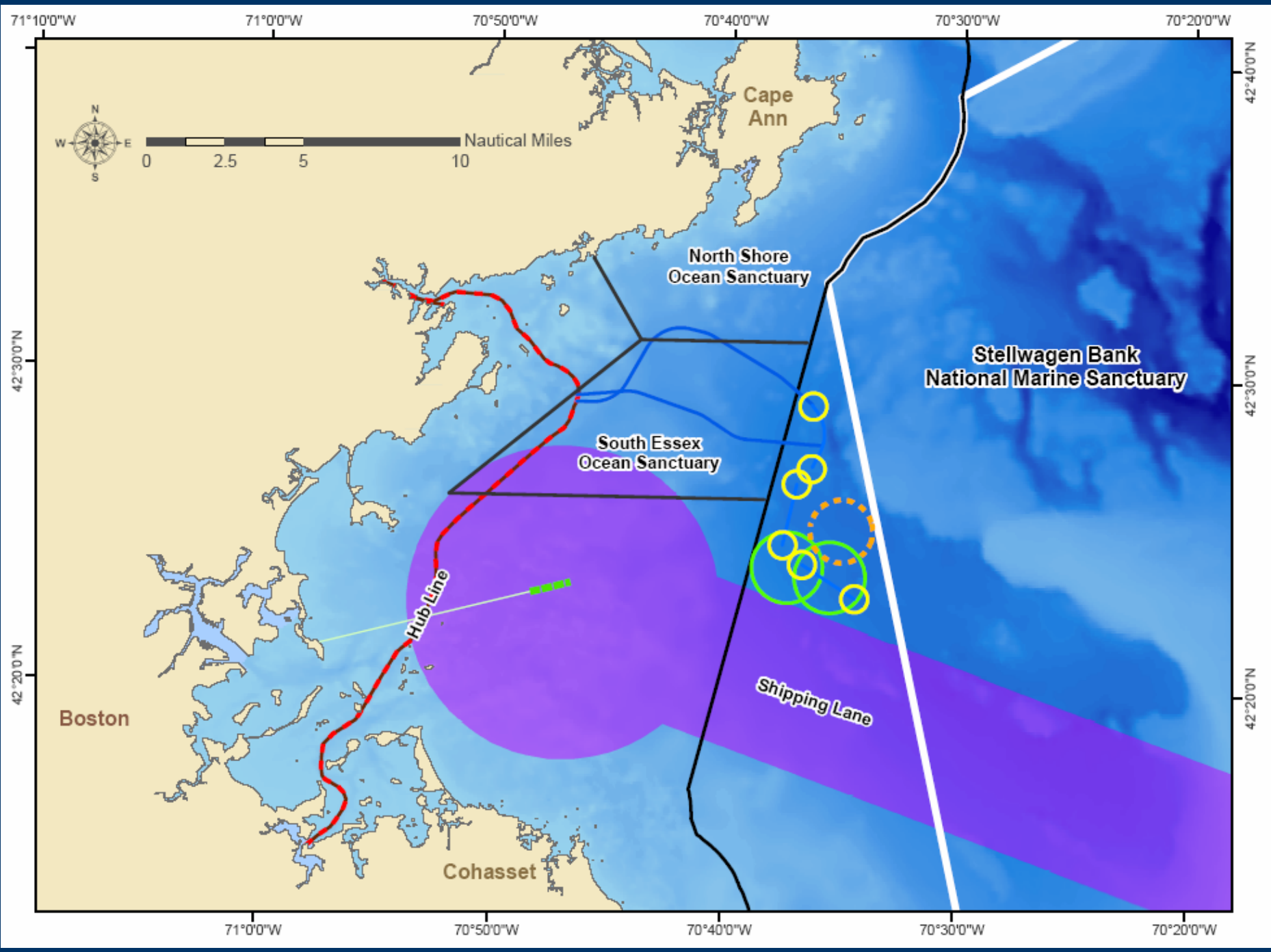
35%  Mud  
● 16%  Sand  
49%  Gravel













## VISION Statement

(Adopted by the Sanctuary Advisory Council – July 2005)

**The Stellwagen Bank National Marine Sanctuary is teeming with a great diversity and abundance of marine plants and animals supported by diverse, healthy habitats in clean ocean waters. The ecological integrity of the sanctuary is protected and fully restored for current and future generations. Human uses are diverse and compatible with maintaining natural and cultural resources.**





# Comprehensive Ocean Management

## Is difficult because:

- Sequential Timing of 'Developments'
- Sporadic Nature of Opportunities and Constraints
- Lack of Political Will and Public Apathy

## Is needed because:

- Affords Assessment of Cumulative Impacts
- Lowers Regulatory Risk in Business Planning
- Reduces Conflict through Policy Integration